

Further, estimation of TSLRIC requires the identification of a cost-minimizing service output level. This, of course, requires a prediction regarding the service's peak load (or busy-hour) demand. TSLRIC assumes no change in the size of the service's peak load demand. That assumption can be criticized in several respects. Today's demand figures result from a pricing structure that should change with the arrival of competition. More importantly, current demand is based on service prices that may be substantially higher than service prices under TSLRIC. Unless demand for network elements is perfectly inelastic, any lower prices will stimulate, perhaps substantially, service demand.<sup>41/</sup> Using TSLRIC estimates alone may therefore

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40/ (...continued from preceding page)

the TSLRIC of a network element includes all of the element-specific investment needed to construct and operate the facilities used to produce that element, including costs that are fixed in the short run. There may well be some cases of non-trivial "common" or "shared" costs, however, and, particularly in light of the potential for confusion and abuse in this area, it is critical that the Commission establish rules to constrain the ILECs' incentives and abilities to manipulate the quantification and allocation of "common" or "shared" costs in ways that thwart competition.

Comments of AT&T Corp. at 62-63 (emphasis in original) (footnotes and citations omitted). NTIA strongly agrees that only those costs that are truly incremental to the provision of a service or functionality should be considered in reviewing interconnection rates.

41/ The existence of economies of scale and peak-load demand problems in the telecommunications sector suggests that identifying economically efficient prices requires not only cost studies, but analyses of service demand as well. Because TSLRIC largely ignores the service demand dimension, the use of TSLRIC  
(continued...)

underestimate the ILEC's true cost of creating and maintaining a network of sufficient size.<sup>42/</sup>

Assuming one could overcome these difficulties, relying solely on TSLRIC-based prices may be unwise for several reasons. Although interexchange carriers (IXCs) have argued that a forward-looking, least cost methodology reflects the "true" economic cost of providing service, TSLRIC estimates differ from standard economic long run costs. Typically, a firm's costs reflect not the plant it could conceivably create, but rather the plant it already has. The theory of long run adjustment in a competitive market holds that, if the provider's plant does not permit the most efficient means of production, potential entrants have an incentive to construct the appropriate plant, implement the least cost production process, and undersell the incumbent.

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<sup>41/</sup> (...continued from preceding page)  
alone will be limited in its ability to yield an economically efficient set of prices.

<sup>42/</sup> A second drawback of TSLRIC is that it is based on the cost of providing an entire service, as opposed to traditional economic cost measures that identify the cost of providing additional units of a service (e.g., LRIC). In practice, however, it may not be possible to measure accurately changes in average costs associated with changes in output. As a result, the best available "increment" for deriving incremental costs will likely be the entire service or functionality. Indeed, the cost principles we advocate below employ a service or functionality as the increment.

In the long run, only those firms that use the least cost technology will remain in business.<sup>43/</sup>

Further, to the extent that these rates reflect a low cost network that is yet to be created, incumbents may have to accept interconnection payments below their actual costs of supplying service. Also, if interconnectors receive rates associated with the least cost method of production, none will have the incentive to create its own efficient network. Finally, no service provider would have an incentive to operate the existing network if constrained to provide interconnection at TSLRIC-based rates that are below average cost.

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<sup>43/</sup> In this respect, TSLRIC runs up against the theory of long-run adjustment in a competitive market:

Even when they do not have any shared and common costs, firms in competitive industries experiencing rapid technological change do not price their goods and services at TSLRIC. Under standard economic theory, the least efficient, viable producer in an industry would earn zero economic profits. All producers using older technology are, at least in the short-run, forced to either upgrade their plant or exit the market. Conversely, positive economic profits are earned by the most efficient and innovative firms in a competitive market. Therefore, what often occurs in competitive industries is that a production facility makes above average profits during its early years of operation which decline over time until the firm is forced to upgrade or close down the production facility. However, if industry-wide prices were set at TSLRIC, only the most efficient producer using the latest technology would be able to cover its costs and make a profit.

Harris and Yao, supra note 40, at 19.

One important potential advantage of the TSLRIC approach, however, is its relative ease of calculation. Rather than estimate costs reflecting the present ILEC network -- a difficult task even if ILECs provided reliable data -- it is possible to generate TSLRIC estimates based on a "green field" approach, which assumes construction of a network from scratch. A recent TSLRIC model created by Hatfield Associates (Hatfield),<sup>44/</sup> for example, estimates the least cost method of providing a service to a given number of customers with the best available technology. To its credit, Hatfield's methodology employs a forward-looking cost approach. But, a TSLRIC model based solely on "green field-derived" costs may not measure forward-looking costs sufficiently from the perspective of either the ILEC or the regulator. The ILEC's forward-looking costs are reflected in its short-run marginal cost curves -- not the cost point estimate generated by Hatfield's green field methodology.<sup>45/</sup>

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<sup>44/</sup> Hatfield Associates, Inc., The Cost of Basic Network Elements: Theory, Modeling and Practice (Mar. 1996) (prepared on behalf of MCI Telecommunications Corp.).

<sup>45/</sup> We understand that the Hatfield model has been revised to address concerns about its green field nature. Specifically, it appears that the approach has evolved from a "scorched earth approach [that assumes] no direct interoffice trunking and homogeneous population density zones" to a "scorched node approach using outputs from the Benchmark Cost Model [developed cooperatively by IXCs and ILECs] to size loop plant requirements." Comments of AT&T Corp., App. E at 1 n.1. Because we believe that TSLRIC estimates should be based on actual ILEC costs, we support, as a general matter, any attempt to modify the Hatfield model or any other TSLRIC model in that direction.

Despite the limitations of a TSLRIC approach, it nevertheless offers an objective, tractable means of estimating the costs of an ILEC's services and functionalities. For that reason, NTIA believes that TSLRIC should be part of the pricing principles that the Commission adopts to ensure just and reasonable rates for ILEC interconnection arrangements and unbundled network elements.

### C. TSLRIC as Part of a Banded Approach

The optimum costing methodology would allow the Commission and State commissions to set interconnection rates at the long run average incremental cost (LRAIC) of service for the present network.<sup>46/</sup> In this way, incumbents would recover their economic

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<sup>46/</sup> As the Department of Justice notes:

The TSLRIC methodology would price network elements at the long-run, forward-looking economic costs of the particular network element, given the efficient provision of all other network components by the ILEC. This standard would be "forward looking" in that it would be based on the best generally available technology, current input prices, and economic cost-minimization. It would be "long run" in that it would include the forward looking capital costs necessary to provide the element. It would define and utilize the network element as the appropriate "increment," and its added cost would be the added economic cost of the element conditioned on the provision of other network components.

DOJ Comments at 27. NTIA's LRAIC also uses the network element as the appropriate increment, although NTIA recognizes that the total costs of the network must be apportioned among all users. The average cost measure makes it easier to accomplish this; by multiplying average cost by some measure of an interconnector's use of the element (e.g., number of subscribers or calls), the interconnection cost for each user can be calculated. We discuss this in more detail below. NTIA's LRAIC is long run in the sense that it includes the capital costs necessary to provide the

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costs of production for the service in question,<sup>47/</sup> including capital costs,<sup>48/</sup> without also recouping costs incurred solely in the provision of other services. NTIA readily acknowledges,

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<sup>46/</sup> (...continued from preceding page)  
 element at least cost, given the existing network configuration. NTIA does not, however, favor a green field approach to interconnection pricing, as that will understate the ILECs' true costs. To the extent that the "forward-looking" component to Justice's TSLRIC contemplates a green field approach, NTIA urges that it be used as a lower bound to structure negotiations between LECs and interconnectors. NTIA and Justice agree that interconnection rates must reflect joint and common costs. See id. at 27 ("TSLRIC rates may need to be adjusted to permit recovery of forward-looking and common costs that may not be included in the sum of element-by-element TSLRIC rates"). In sum, if Justice is, in fact, not suggesting a green field approach to interconnection pricing, our approaches are quite similar.

<sup>47/</sup> The service in question here is, of course, telephony service. Consequently, the derivation of an ILEC's LRAIC must not include investments "in facilities 'over-designed' to enable the present or future delivery of cable television or other video services, 'official networks' overdesigned to facilitate the potential future provision of interexchange services, and other investments designed to meet the expected incremental demands or technical requirements of non-basic or enhanced services." Comments of AT&T Corp. at 59

<sup>48/</sup> In the long run, all costs, including capital costs, are variable. Long run costs include a "fair" return on invested capital. This return is correctly thought of as a cost; if it were not paid, those investment dollars would migrate to other opportunities that did pay a fair return. Long run costs must, therefore, reflect the opportunity cost of capital. This also includes the ILEC's costs of unbundling.

The reference to incremental cost leaves open the "size" of the increment. To the extent that average costs vary with the quantity of service produced, the increment should be each additional unit of service provided (i.e., each additional customer). In practice, however, it may be difficult, if not impossible, to measure long run average cost at such a fine level. Instead, the regulator will likely treat the entire service or functionality (all subscribers served) as the increment, and estimate average costs by dividing the total long run costs associated with the service (or functionality) by the number of subscribers.

however, that given the informational asymmetry between ILECs and regulators, it may be difficult to calculate LRAIC accurately.

For that reason, we believe that the Commission should establish pricing principles that define a "zone of reasonableness" within which negotiating parties may seek interconnection and unbundling rates. That zone should be defined at the bottom by TSLRIC.<sup>49/</sup> Its upper limit should be established through a "bottom-up" approach beginning at TSLRIC.<sup>50/</sup> An ILEC would have an opportunity to demonstrate by clear and convincing evidence that the TSLRIC estimate should be adjusted to include additional costs -- joint, common, or other<sup>51/</sup> -- that: (1) contribute to a ILEC's long run average

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<sup>49/</sup> To the extent that State regulators are certain that an ILEC has little incentive to reach interconnection agreement or has too much bargaining power over potential interconnectors, the threat of TSLRIC pricing may be an effective motivational tool. We prefer reliance on voluntary negotiation to establish interconnections terms. As discussed below, in many cases, the Act contains sufficient incentives for both interconnectors and ILECs to reach agreement. We also recognize, however, that State regulators may need latitude to determine interconnection rates in those instances when voluntary negotiations fail. *See, e.g.,* Washington Util. & Transp. Comm'n v. US West Comm., Docket No. UT-950200, Fifteenth Supp. Order 89 (Apr. 11, 1996).

<sup>50/</sup> Here we allude to TSLRIC estimates that do not already include an "overhead factor" to account for shared costs. For Hatfield's most recent estimates, the regulator would subtract the six percent overhead factor to recover "pure" TSLRIC estimates. ILECs would be required to justify costs in excess of these lower estimates.

<sup>51/</sup> As the Justice Department points out, TSLRIC should be adjusted upward to account for forward-looking joint and common costs, whenever such costs exist. DOJ Comments at 27, 31-32. NTIA believes that the Commission should determine what permissible categories of such joint and common costs are.

incremental cost of the services used by an interconnector and; (2) can be justified to the regulator as being clearly incremental to the provisioning of the service or functionality at issue, but is not part of the TSLRIC estimate for that service or functionality.<sup>52/</sup>

The above procedure leaves open the question of whether, and if so how, to recover any differences between historical costs and TSLRIC's forward looking costs. Clearly one should consider for recovery only those costs that the ILEC can demonstrate convincingly to the regulator are incurred in service provisioning. Moreover, clearly the ILEC may not be entitled to recover any or all of its embedded costs, no matter how prudently incurred. First, the regulator should require the ILEC to mitigate these costs in instances where greater efficiency can be gained through the existing network. Secondly, any additional benefits that the ILECs gain as a result of changes in the regulatory environment should be taken into account (e.g., benefits from interLATA entry). There may be some remaining shortfall, but its size, of course, will not be determined for a number of years, certainly until after interLATA entry. As a result, if the shortfall is to be recovered at all it would be unwise to include it in input prices before the size of the shortfall is better known. Finally, we note that if there are

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52/ See Bridger Mitchell, Werner Neu, Karl-Heinz Neumann, and Ingo Vogelsang, "The Regulation of Pricing of Interconnection Services" at 116 (Mitchell et al.) (on file with NTIA).



any historical costs that should be recovered, it is preferable to recover them through input prices as a last resort only. Recovery through input prices should be done only through a competitively neutral manner.

The price negotiated by the parties could fall anywhere within that zone of reasonableness.<sup>53/</sup> NTIA expects that the parties will bring to the negotiation their assessments of how the relevant State commission will apply the Commission's pricing principles to define the zone in particular circumstances.<sup>54/</sup> Each party's assessment of the State regulator's likely decision will be an important component of its bargaining strategy, because that assessment will establish the odds of having unfavorable pricing terms imposed upon them. In this way, Commission-established principles for establishing the zone of

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<sup>53/</sup> The same would be true of a rate fixed by the State via arbitration.

<sup>54/</sup> The RA [Regulatory Authority] should indicate that, if no agreement was reached and it were asked to make an ex-post determination, it would determine a charge in that range on the basis of its assessment of the demand conditions in that market. This would provide proper incentives for the two sides in the negotiations. Not knowing what the RA would do in case of failure of negotiations, both would have a preference to reach a settlement on their own accord. Of course, if either party speculated that it would have a good chance that its view on charges would be confirmed by the RA, it might opt to let negotiations fail and rely on the RA's decision. This would have to be accepted as a legitimate part of the process.

reasonable prices would increase the parties' incentives to negotiate in good faith.<sup>55/</sup>

The Commission can strengthen those incentives by promulgating some basic rules for State commissions as they arbitrate contested negotiations. If one or more party requests State commission arbitration concerning the rate for a given interconnection arrangement or unbundled network element, the regulator should begin by defining, consistent with the Commission's pricing principles, the upper and lower bounds of the zone of reasonableness for that item. If both parties'

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<sup>55/</sup> NTIA believes that the prospect of interLATA entry will give the BOCs, at least, incentives to negotiate in good faith. We recognize, nevertheless, that the BOCs' incentives in this respect may decline after they have been certified to provide interLATA service. Interconnectors may be protected, to some extent, by the BOCs' existing agreements in that market. To the extent, however, that those agreements are unsuitable for the late entrant, the State regulator may have to choose rates in response to failed negotiations. In extreme circumstances, we see no reason why the Commission could not revoke an ILEC's certification to provide interLATA service.

In general, we favor agreements that give ILECs no incentive to alter their behavior after receiving interLATA certification. Self-executing contracts, which spell out penalties for readily observable ILEC violations with regard to service quality, may be helpful. If these are among the first contracts signed by ILECs, the self-executing provisions may also afford protection for subsequent entrants.

We also strongly recommend that the Commission include as part of the public interest standard governing BOC interLATA entry under Section 271 a requirement that the BOCs have in place processes and procedures for on-going interconnection negotiations, that they have established a practice of bargaining in good faith, that their agreements with interconnectors be self-enforcing, and that their business dealings pursuant to those agreements be found to be in good faith.

proposed rates lie outside of the bound, the State commission should either send the parties back for further negotiation or choose a rate that falls within the zone.<sup>56/</sup> If one of the proposed rates is within the zone and the other is not, the regulator could either opt for the in-band price, or allow the party who lies outside the band to make a final offer within the zone.<sup>57/</sup> If both offered prices are within the zone, the Commission should require that the State regulator choose either of the two prices.<sup>58/</sup>

#### D. Allocating Costs Among Services and Interconnectors

As alluded to above, assigning costs to individual services or functionalities is difficult in the presence of substantial

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<sup>56/</sup> Once a price for an interconnection arrangement or unbundled network element has been established, whether by negotiation or arbitration, that rate ought to become the ceiling of the zone of reasonableness in subsequent negotiations between the same parties about the same arrangement or element. In other words, in any negotiation triggered by the expiration of an interconnection agreement, the zone of reasonableness for the rates for any arrangement or network element that was part of the old agreement will be defined by TSLRIC and the applicable rate in the expired agreement. It would be reasonable, however, to permit some flexibility in that upper bound to reflect changes in ILEC costs over time. One solution, at least for price cap regulated ILECs, would be to allow adjustments to the upper bound in accordance to the price cap escalator formula applicable to the ILEC involved. The parties would remain free, of course, to negotiate (and a State commission could establish) a new rate within the new zone of reasonableness.

<sup>57/</sup> This latter option would minimize the chance of a mistaken choice in those instances where, for example, one party's price lies at one extreme of the zone and the other party's offer falls just outside the other extreme.

<sup>58/</sup> See Notice ¶ 268 (requesting comment on "final offer" arbitration).

shared costs. One way to handle this problem is to compute a percentage mark-up on the LRIC of each service, as Hatfield does. Although Hatfield employs a six percent mark-up, that estimate may not be reasonable for all ILECs. If the size of total shared costs is known, one could conceivably calculate the unique percentage mark-up applied to all services such that shared costs are just covered. In practice, it would be wise for the State regulator to employ a relatively low estimate of shared costs in the lower bound of its price band for a service (e.g., Hatfield's), a higher estimate in the upper bound, and then permit the parties to arrive at a mutually beneficial arrangement through negotiation.<sup>59/</sup>

Another potential problem arises in apportioning LRIC among users (both interconnectors and the incumbent ILEC) who share a facility. The TSLRIC methodology, for example, derives cost estimates for an entire service or functionality; it does not specify how that total cost should be apportioned among users.<sup>60/</sup>

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<sup>59/</sup> A similar approach is suggested by Mitchell et al.:

The percentage mark-ups on top of LRAIC for interconnection services should vary between zero, as the lower limit, and, as the upper limit, the minimum uniform mark-up, that is, that common mark-up that, when applied to the LRAIC of each service, would lead to revenues that cover all costs, including common costs, and all other revenue requirements.

Id. at 113.

<sup>60/</sup> One could, conceivably, compute the ILEC's total costs before and after it provided a service or functionality to an  
(continued...)

The costs of a shared facility should be apportioned based on the capacity required by the individual interconnectors:

Pricing would be capacity based if a user paid at each point of time in relation to the depreciation charges for that part of the capacity that, either at the time of investment, or at the latest revaluation of the asset because of changing market conditions, was "reserved" for him. . . . It would. . . not be unrealistic to apply capacity-based pricing to large users, in particular interconnecting network operators. Such users have predictable consumption patterns. . . . Capacity-based costing would not preclude charging for operating costs on the basis of actual usage with which this kind of cost varies. Nor would it preclude, of course, charges based on actual usage if the latter exceeds the capacity that was reserved for the demander.<sup>61/</sup>

In New York, parties have negotiated capacity-based pricing arrangements that employ measures of actual usage. Under the NYNEX-Teleport agreement:

The general form of the agreement is to establish a particular charge for a two-way channel of given capacity between the two companies. Traffic is measured at the busy hour each month and the relative measurements are used as an allocation factor for the established channel rate. If traffic is exactly balanced, the payments to each company cancel out and the level of the established rate is irrelevant. If traffic is not balanced, and if Teleport, for example, sends more traffic to NYNEX than it receives

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<sup>60/</sup> (...continued from preceding page)  
interconnector to determine that entrant's individual TSLRIC. The same interconnector, however, might face different TSLRICs depending on when it entered the market. That is, the first entrant might face a relatively large TSLRIC, as the ILEC reconfigured its network to accommodate interconnection while subsequent entrants might bear much lower burdens. We think it best, therefore, that the ILEC compute a comprehensive TSLRIC for a service, and then apportion that cost among users.

<sup>61/</sup> Mitchell et. al., supra note 52, at 106.

from NYNEX at the busy hour, that imbalance is used to compute a net payment from Teleport to NYNEX.<sup>62/</sup>

As Brock and others have noted, the distinction between peak and off-peak traffic (1) provides an administratively simple way to calculate contributions from firms and (2) promotes economic efficiency because costs are "generally associated with peak traffic and therefore the effectively zero charge for terminating off-peak traffic is cost based."<sup>63/</sup> Again, the exact method for sharing costs among users should be agreed upon through negotiation and may vary across markets. The NYNEX-Teleport agreement is but an example of a usage-based agreement that promotes economic efficiency.

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<sup>62/</sup> Gerald Brock, "Interconnection and Mutual Compensation With Partial Competition," in The Economics of Interconnection 14 (Apr. 1995) (prepared for Teleport Communications Group).

<sup>63/</sup> More generally, Brock notes that:

If the established price for a channel of given capacity is near the real cost, then the NYNEX-Teleport arrangement provides an attractive model for general interconnection issues. It would approach a cost-based interconnection fee for both peak and off peak traffic, leading to economic efficiency and opportunities for pricing innovations.

Id. at 15.

IV. CONCLUSION

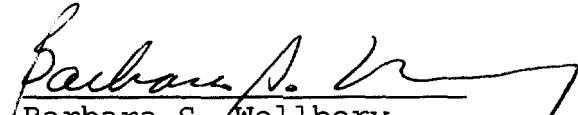
For the foregoing reasons, NTIA respectfully requests that the Commission adopt the recommendations contained herein.

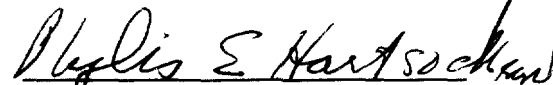
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